

Design of 100 kW solution reactor using LEU fuel to produce Mo-99 for medical purposes



- Molybdenum-99 is the most widely used radioisotope in nuclear medicine worldwide
 - >40,000 procedures per day in U.S. alone
 - diagnostic tool for cardiac diseases, bone scans, imaging of internal organs—brain, lung, liver, thyroid, etc.
- Mo-99 currently produced in highly enriched uranium (HEU) 20 kW solution reactor
- New technology for 100 kW reactor using low-enriched uranium (LEU) has strong advantages
 - reduces production costs by 90%
 - highly efficient (extracts 90% of radioisotope)
 - produces considerably less nuclear waste
 - eliminates/reduces use of weapons grade HEU in the civilian sector
- Significant commercial potential
 - global radiopharmaceutical market is \$1 billion
 - Mo-99 market segment is >\$120M, with est. 10% annual growth
- Projected # jobs in Russia: 50 nuclear scientists short-term, 100 long-term